# The Relationship Between Leadership Style and Employee Voice Behavior: A Meta-Analysis Based on Random-Effects Model

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**Abstract**—Previous studies have shown that leadership style in the business affects the employee voice behavior. Nevertheless, the correlation between leadership style and employee voice behavior showed varying results. This meta-analysis synthesizes research on the relation between leadership style (Including transformational, transactional, ethical, authentic, charismatic, servant and inclusive) and employee voice behavior. A random-effects model was used to calculate the mean weighted product-moment correlation (r) for 158 studies with 54983 subjects. The results of the study showed that researchers should attend to the difference in leadership styles in order to more effectively encourage employees to speak up and provide support for further investigation of leadership theory and employee voice.

**Keywords**-Meta-Analysis; Leadership style; Employee voice behavior

## 1 INTRODUCTION

Over the past two decades, in addition to individual factors (e.g., individual traits, emotions) and organizational context (e.g., openness to management, organizational climate), leadership style has been shown to be an important factor influencing employee voice behavior [1]. while there is a strong body of literature linking single leadership style and employee voice behavior, there are fewer studies focused on how different leadership styles really affect employee voice behavior, and it is unclear whether the explanatory power of employee voice behavior is stronger or weaker. Both domestic and international studies have shown that even when the same leadership style there is some variation in the findings on employee voice. The scales used in different studies differ in the dimensions of leadership style and employee voice behavior, and the different scales affect the nature and strength of the relationship between leadership style and employee voice, and are likely to provide different explanations for the relationship. In addition, the relationship between leadership style and employee voice behavior needs to be explored deeply to determine whether different research samples and cultural contexts have an impact on the relationship between leadership style and employee voice behavior based on differentiated cultural contexts. Therefore, a meta-analysis is conducted to investigate the relationship and its moderating effects.

Rubin suggests that the purpose of the meta-analysis is to estimate the level of relationships of the studies that have been done [2]. Meta-analysis can also convince researchers more accurate

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and credible conclusions that can be used as a reference for others [3]. The purpose of this paper is to report quantitative findings from a meta-analysis of studies focused on the relationship between multiple leadership styles and employee voice behavior, which includes transformational, transactional, ethical, authentic, charismatic, servant and inclusive leadership styles.

# 2 METHOD

## 2.1 Selection of Studies

This study was carried out with the following procedure:

- Collecting data from primary studies: Data collection in this study is done by tracing literature journal manuscripts on the internet. Included electronic databases (CNKI, CDFD, CMFD, PsycINFO, ABI/Inform, EBSCO, Wiley-Blackwell, ScienceDirect, SpringerLink, ProQuest Dissertations and Web of Science, Google Scholar). The keywords concerning leadership style and employee voice behavior were searched, which includes transformational, transactional, ethical, authentic, charismatic, servant and inclusive leadership styles.

- The criteria for inclusion of the study in the meta-analysis were as follows: To have the statistical information necessary for correlational meta-analysis (n and r, or $R^2$values); to be a study measuring the correlation between leadership style and employee voice.

- Based on the search results using the keywords above, approximately 150 papers were published between 2000 and 2020, having information on the number of subjects (n) and correlation values (r) of leadership style and employee voice.

- Based on the criteria, 150 papers containing 158 studies be used for this meta-analysis. (Contact the author to see the full primary study table).

## 2.2 Coding Procedure

The coded materials include qualitative and quantitative values. The qualitative values include literature information in the literature (author/year), measure used for employee voice behavior, and cultural context of the study (Collectivism vs Individualism). Based on Hofstede's cross-country cultural survey data for coding [4]. The quantitative values include sample size, correlation coefficient (effect value) size, and variable reliability. After obtaining the coded data, the authors processed the data. In order to determine the reliability of the coding system, two researchers carried out the coding process. The specific processes of coding are as follows:

- Identifying statistics that can express the relationship between variables, such as correlation coefficient, regression coefficient and path coefficient.

- Transform all individual statistics into a unified Effect Size (ES) - the correlation coefficient (r).

- Calculate the combined effect size, which is a statistic that reflects the relationship between variables as a whole without relying on individual studies.

### 2.3 Effect Size Calculation

The product-moment correlation (r) was used as the effect size statistic for the meta-analysis. When the whole effect size is not explicitly given in the literature, the method to explore the correlation between leadership style and employee voice behavior is to use the arithmetic average of the correlation coefficients of each dimension to derive the final effect size; when it involves the comparison of survey data over multiple years, which produces two or more correlation coefficients, multiple r values are counted separately; when employee voice behavior is divided into multiple dimensions measured and counted separately, which produces multiple correlation coefficients, they are counted separately after arithmetic averaging.

### 2.4 Methods of Analysis

This study used CMA 3.0 (comprehensive meta-analysis v3) for data analysis.

## 3 RESULTS

### 3.1 Publication Bias

To test publication bias, funnel plots were visually inspected for symmetry and Begg and Mazumdar's rank correlation were used [5]. The funnel plot of this experiment is shown in Fig. It can be seen that most of the experimental results are concentrated at the top and more evenly distributed on both sides of the mean effect size, which indicates that the possibility of publication bias is small. Fail-safe number is 64337, which is greater than the critical value of 800 (Effect size * 5 + 10), (calculated as the number of effect size 158) therefore, the conclusions of this study can be considered reliable. The p-values of Egger's regression coefficient for each leadership style were not significant ($p > 0.05$), p-values of Begg's rank correlation test were also not significant ($p > 0.05$), indicating that the findings were not affected by publication bias.

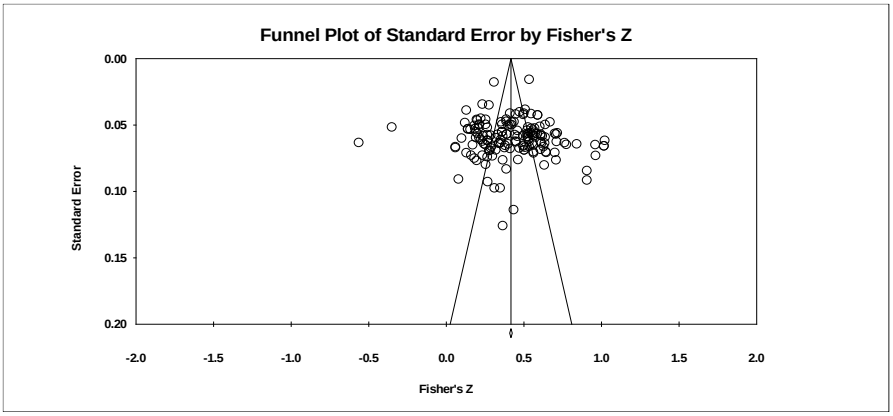


**Figure 1.** Funnel plot of the distribution of each effect value of Leadership style and Employee voice behavior

**Table 1** Publication Bias

| Outcome Variable | Egger's regression coefficient test | | | | | | |
|---|---|---|---|---|---|---|---|
| | ***Intercept*** | ***SE*** | ***LL*** | ***UL*** | ***t*** | ***df*** | ***P*** |
| EVB | 0.610 | 0.919 | -1.205 | 2.426 | 0.663 | 156 | 0.113 |
| **Outcome Variable** | ***Begg* and Mazumdar rank correlation** | | | | | | |
| | ***Tau*** | | | ***p*** | | | |
| EVB | 0.064 | | | 0.227 | | | |

Note: Studies were modeled as random effects, k = number of studies, n= sample size r = effect size; EVB= employee voice behavior.

### 3.2 Tests for Heterogeneity

The test for heterogeneity is an analysis of the degree of variation between multiple independent samples, and it is an essential stage in meta-analysis. According to statistical principles, only homogeneous data can be combined. If heterogeneity exists, random-effects model need to be selected to correct for it. There are two common methods for testing heterogeneity: Q-value test and $I^2$ value test. When $Q \leq K-1$, both models can be chosen; when $Q > K-1$, the random-effects model should be used. The use of the model can also be decided according to the $I^2$ value, i.e., when $I^2 \geq 50\%$, indicating the existence of heterogeneity, the random-effects model is used; when $I^2 \leq 50\%$, the fixed-effects model is used.

In this experiment, the above two methods were combined and the results are shown in Table 2. Leadership style: Q value was 2125.940, much larger than the critical value of 158, indicating the presence of heterogeneity; $I^2$ value was 92.615%, greater than 50%, further indicating the presence of heterogeneity in the sample.

Based on the results of the heterogeneity test, a random effects model was chosen for the experiments. The whole relationship between leadership style and employee voice behavior was examined from the overall perspective, with 158 effect sizes and a total number of 54983 subjects, and the overall correlation coefficient between leadership style and employee voice behavior was 0.405. Lipsey and Wilson concluded that the correlation was low when $r \leq 0.1$, moderate when $0.1 < r < 0.4$, and high when $r \geq 0.4$ [6]. According to this, the relationship between leadership style and employee voice behavior is a high-intensity positive and reaches the level of significance ($p < 0.001$). Therefore, the integration of leadership style and its dimensions can effectively promote employee voice behavior in terms of larger sample size and longer time span.

**Table 2** Heterogeneity test for the overall effect of leadership style

| Model | Combined effect value | k | 95%CI | | Z |
|---|---|---|---|---|---|
| | | | ***Upper limit*** | ***Lower limit*** | |
| Fixed Effects | 0.399 | 158 | 0.406 | 0.391 | 98.504 |
| Random Effects | 0.405 | | 0.430 | 0.378 | 26.822 |
| **Model** | **Tests for Heterogeneity** | | | | |
| | ***df*** | ***$I^2$*** | ***Q*** | | ***p*** |
| Fixed Effects | 157 | 92.615 | 2125.940 | | 0.000 |
| Random Effects | | | | | |

### 3.3 Moderation Analysis Results

Where significant between-study heterogeneity is observed, moderator analysis is an appropriate approach to investigating potential sources. The moderation variables that could be tested included the leadership styles, number of dimensions of the Employee Voice Behavior Scale (one dimension [7], two-dimensional [8] [9] [10], three-dimensional [11]) and cultural context of the study (Collectivism vs Individualism). With the use of meta-analysis, this paper examines the impact of common leadership styles on employee voice behavior and the moderating variables that may influence the relationship, and explored the intrinsic relationship and magnitude of the impact.

The heterogeneity analysis in Table 2 shows that different types of leadership styles significantly affect the relationship with employee voice behavior ($p < 0.001$).

The moderated analysis in Table 3 shows that inclusive leadership style has the highest correlation ($r = 0.480$), followed by transformational leadership style ($r = 0.423$), authentic leadership style ($r = 0.402$), charismatic leadership ($r = 0.396$), servant leadership ($r = 0.380$), ethical leadership style ($r = 0.361$), and the lowest correlation is transactional leadership style ($r = 0.181$). was transactional leadership style ($r = 0.181$).

From the moderated analysis in Table 3, it was found that different content of employee voice significantly influenced the relationship between leadership style and employee voice behavior ($Q = 1096.340$, $p < 0.001$). The analysis of the different contents of employee voice was divided into two dimensions, and the correlation between leadership style and employee voice was found to be higher ($r = 0.428$) than the correlation with one dimension ($r = 0.373$).

As shown in Table 3, the relationship between leadership style and employee voice was significantly different in the different cultural contexts of collectivism and individualism ($Q = 1775.669$, $p < 0.001$). The strength of the correlation varied across cultures in each study, and the national sample of collectivist culture was more favorable to the emergence of employee voice behavior.

**Table 3** Single-moderator analyses—categorical moderators.

| **Moderator Variables** | **Category Name** | **K** | **n** | **r** |
|---|---|---|---|---|
| Leadership Styles | AL | 23 | 7402 | 0.402 |
| | CL | 4 | 952 | 0.396 |
| | EL | 32 | 10693 | 0.361 |
| | IL | 22 | 6534 | 0.480 |
| | SL | 24 | 11478 | 0.380 |
| | TC | 3 | 698 | 0.181 |
| | TF | 50 | 17226 | 0.423 |
| Cultural Background | Individualism | 24 | 13859 | 0.345 |
| | Collectivism | 134 | 41124 | 0.415 |
| Employee Voice Scale | One Dimension | 65 | 27514 | 0.373 |
| | Two-Dimensional | 88 | 26345 | 0.428 |
| | Three-Dimensional | 5 | 1124 | 0.404 |
| **Moderator Variables** | **Category Name** | **95%CI** | | **Q** |
| | | ***Lower limit*** | ***Upper limit*** | |

| Moderator Variables | Category Name | K | n | r |
|---|---|---|---|---|
| Leadership Styles | AL | 0.338 | 0.463 | 230.604 |
| | CL | 0.207 | 0.556 | 31.657 |
| | EL | 0.296 | 0.422 | 442.130 |
| | IL | 0.418 | 0.537 | 206.863 |
| | SL | 0.302 | 0.452 | 455.405 |
| | TC | 0.053 | 0.302 | 5.299 |
| | TF | 0.376 | 0.469 | 657.697 |
| Cultural Background | Individualism | 0.283 | 0.405 | 323.512 |
| | Collectivism | 0.385 | 0.444 | 1775.669 |
| Employee Voice Scale | One Dimension | 0.332 | 0.412 | 931.279 |
| | Two-Dimensional | 0.392 | 0.462 | 1096.340 |
| | Three-Dimensional | 0.203 | 0.572 | 52.915 |

| Moderator Variables | Category Name | $I^2$ | Test of null (2-Tail) | |
|---|---|---|---|---|
| | | | ***Z*** | ***P*** |
| Leadership Styles | AL | 90.460 | 11.187 | 0.000 |
| | CL | 90.523 | 3.936 | 0.000 |
| | EL | 92.988 | 10.196 | 0.000 |
| | IL | 89.848 | 13.223 | 0.000 |
| | SL | 94.950 | 8.958 | 0.000 |
| | TC | 62.255 | 2.768 | 0.006 |
| | TF | 92.550 | 15.676 | 0.000 |
| Cultural Background | Individualism | 92.891 | 10.256 | 0.000 |
| | Collectivism | 92.510 | 24.255 | 0.000 |
| Employee Voice Scale | One Dimension | 93.128 | 16.460 | 0.000 |
| | Two-Dimensional | 92.065 | 20.652 | 0.000 |
| | Three-Dimensional | 92.441 | 3.775 | 0.000 |

Note: Studies were modeled as random effects, k = number of studies, n= sample size r = effect size; Q = homogeneity test; $I^2$ = percentage of variance in effect sizes that is attributable to systematic variation. AL= authentic leadership, CL= charismatic leadership, EL= ethical leadership, IL= inclusive leadership, SL= servant leadership, TC= transactional leadership, TF= transformational leadership.

## 4 STUDY LIMITATIONS AND FUTURE RESEARCH

*The shortcomings in this study were that:*

a) It was not possible to reach all studies, despite the strategies developed to access the studies to be included in the present meta-analysis. The full texts of some studies were not accessible through the databases searched.

b) In this study, leadership styles involved more scales and wider dimensions, which did not allow for specific comparative analysis.

c)Since most of the included literature uses proportional distributions to report subjects' experience, age, education, and position, making it impossible to calculate these factors precisely, it was not possible to explore the effects of these factors on the relationship between leadership style and employee voice behavior.

A summary of the existing research on leadership style and employee voice reveals that there is much room for future research in this area. Firstly, most of the existing studies are based on individual perspective, focusing on the relationship between individual leaders and employee

voice and the mechanism of action, so future studies can focus on observing the influence of team leaders on employee voice rather than limiting the influence of individual leaders on employee' behavior. Secondly, most of the current types of suggestions are limited to commercial enterprises, and most of the ways of suggestions are limited to the upper and lower levels of the same department, but cross-sectoral suggestions and suggestions in non-commercial organizations can be studied. Finally, the current research is mainly about the influence factors of employee voice behavior, but researchers can focus on the effect of employee voice and the relationship between suggestion and execution, so as to enrich and deepen the practical meaning of employee voice.

## 5 CONCLUSION

*The results of the study found that:*

a) There is a highly significant positive relationship between leadership style and employee voice behavior.

b) The results of the moderating effect test indicated that different types of leadership styles had a significant moderating effect on the relationship between leadership styles and employee voice behaviors. Inclusive leadership, transformational leadership, authentic leadership, charismatic leadership, servant leadership, and ethical leadership were associated with decreasing strengths of employee voice behaviors in descending order.

c) The strength of the correlation between leadership style and employee voice behavior was higher in this study when using a two-dimensional scale to measure employee voice behavior than when using other dimensional scales.

d) The strength of the correlation varied across cultures in each study, and the national sample of collectivist culture was more favorable to the emergence of employee voice behavior.

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